T-170

Neanderthal Man

Theodore Kaczynski

In this paper I will discuss two main topics: the differences between the early "progressive" Neanderthals and the late "conservative" Neanderthals, and the question of how broad the term "Neanderthal" should be, or more specifically, whether the Rhodesian — Saldanha or Solo men should be considered Neanderthals.

I. Are the Rhodesian and Solo Men Neanderthals?

The European type Neanderthals form a definite and rather special group. Many anthropologists, however, like to

class as Neanderthals the Solo Men of Java and the Rhodesian – Saldanha type of man of Africa. For example, R. Singer quotes Franz Weidenreich as follows: "I would like to quote two appropriate sentences of Franz Weidenreich's (1940) with which I readily concur:

'... for it proves that the so-called Neanderthal Man of Europe, notwithstanding his uniformity when compared with the Rhodesian Man of South Africa* (sic) or the Homo Soloensis of Java, has produced certain regional variations

---

* Singer appended a footnote here: "Broken Hill is in Northern Rhodesia, not South Africa."

which are equivalent to racial differences of today.'"[1] (Weidenreich classifies the European Neanderthals, the Rhodesian and Saldanha men, and the Solo Men as three different subspecies of Homo primigenius.) Also, von Koenigswald and others refer to these men as Neanderthals.

I think this is wrong. First consider the Solo Men. What traits do they actually have in common with the European Neanderthals? Compared to Homo sapiens, both have very heavy brow ridges, a low, thick skull with

1. R. Singer, "The Rhodesian, Florisbad and Saldanha Skulls" in "Hundert Jahre Neanderthaler" p. 61.

its widest point far down, a marked occipital torus, small mastoid processes. But every non-sapiens man we know of (excepting perhaps some of the Mt. Carmel specimen) has most of these traits — Homo sapiens is special in <u>not</u> possessing them. There is considerable difference between the European Neanderthals and the Solo Men — actually; the Solo skulls are much closer to the Pithecanthropines than to the Neanderthal Men, so if they <u>must</u> be classed with one or the other they ought to be put with the Pithecanthropus-Sin-

anthropus soc.

First of all, the cranial capacity of S. Van was apparently much smaller than that of Neanderthal Man, but much the same as that of Sinanthropus. According to von Koenigswald, the internal volumes of the Solo skulls were all between 1035 and 1255 cc. But Boule and Vallois, in Fossil Men, give these figures for various Neanderthals:

Neanderthal	1,408	cc.
Monte Circeo	1,550	cc.
Le Moustier	1,564	cc.
La Chapelle	1,600	cc.

La Ferrassie		1,641 cc.
Saccopastore I	(female)	1,200 cc.
Gibralter	(female)	1,300 cc.
La Quina	(female)	1,367 cc.

Which yields;

Average of men = 1,553 cc.
Average of females = 1,289 cc.

This puts only one Neanderthal, a female, within the Solo range, and not one of the Solo skulls has a volume as large as even the female average of the European Neanderthals. This is surely outside the range of a mere racial variation. Sinanthropus, on the other hand, had a cranial capacity of

about 1,150 cc., which is nearly in the middle of the Solo range.

Though both the Solo and Neanderthal men had heavy supraorbital ridges, those of Solo were heavier and of very different form, being much more like the brows of the Pithecanthropine group. In the Solo skulls the brow ridge was like a single arch or bar of bone over the eyes; the continuity of the ridge was not distinctly broken in the middle. But in the European Neanderthals the brow ridge makes a strong downward dip in the center, thus forming two

distinct arches, one over each eye. And in the Neanderthals the brows are of more or less uniform thickness, and curve down smoothly at the sides, while in Solo they are definitely more heavily developed at the corners and tend to jut out there, as with the Pithecanthropus – Sinanthropus group. (See Fig. 2)

The great occipital torus of Solo Man also puts him closer to the Pithecanthropine group than to the Neanderthals — and the shape of the whole occipital region differentiates him from both of them, particularly from the Neanderthals.

The Neanderthals typically had a bun-shaped occiput. In Solo Man you do not find this — and more important, there is a sharp breaking-off, at almost a right angle, at the level of the torus, with a flat nuchal plane. In other words, the occipital bone seems clearly divided into two surfaces. (See Fig. 1)

Also, Solo Man was closer to the Pithecanthropine group in his thicker skull, which was lower, narrower in the frontal region, and with less suggestion of a forehead than in Neanderthal Man. (Fig. 1) The endocranial casts of the

Solo skulls are similar to those of Sinanthropus.

Thus, in any respect in which Solo Man seems similar to Neanderthal Man when contrasted with Homo Sapiens, he can be shown not only to differ from the Neanderthals in no small degree, but also to be much closer to the Pithecanthropus - Sinanthropus group. It is not sensible to put him in the former group (much less call him a mere <u>race</u> of Homo neandertalensis) when he is much more like the latter. To call Solo Man a Neanderthal is to make the term "Neanderthal" so broad as to include almost anything between

the Sinanthropus and sapiens levels.

The Rhodesian — Saldanha type is less different from Neanderthal Man, but still seems closer to Solo Man. Aside from their strong ...ctural affinities, the Rhodesian and Solo Men had the same peculiarity of the occipital bone — the definite corner, or breaking-off, at the level of the torus. The torus was more pronounced than in the Neanderthals. The brow ridges of the Rhodesian and Saldanha skulls are much more massive than those of the Neanderthals, and also straighter, though not as straight as in the Solo skulls. (See Fig. 2)

According to Heaton, the forehead of Rhodesian Man is much lower and narrower than in any Neanderthal and the vault of his skull was little higher than that of Pithecanthropus.

More important, the face of Rhodesian Man does not fit in with the Neanderthal group. His nose is much lower and narrower and his mid-face is not as projecting, but his upper jaw is a good deal more prognathic. To demonstrate this, in figure 3, using a profile photograph of the Rhodesian skull, I have drawn a line from the top of the orbit

(not the lower-jaw) to the tip of the nose and from there to the tip of the upper jaw (not the teeth). I then drew similar lines using every available suitable profile photograph of a Neanderthal. The result, Fig. 3, shows the different, straighter shape of the Rhodesian face, which is also considerably longer than the Neanderthal face. According to Hooton, the facial length of the Rhodesian skull is 95 m.m, and that of the long-faced Neanderthal of La Chapelle is 87 m.m.

In addition, there are some less important differences. Rhodesian Man,

if he was male, had a small cranial capacity — 1325 cc. According to Boule and Vallois, his femur and tibia were very diffent from those of Neanderthal Man, and very modern in form. Hooton says these bones indicate a man 5'10" tall, much taller than the Neanderthals we know of, who were from 5'1" to 5'5". It is not certain, however, that the long bones belonged to the skull.

The following are the most important traits which can be regarded as characteristic specializations of Neanderthal

Man, distinguishing him from other early men: projecting mid-face (as distinct from prognathism of the jaws), bun-shaped occiput, the characteristic brow form, high, wide nose, flat, sloping cheekbone without canine fossa, lack of elevation of the midline of the skull, peculian low bulging of the skull walls, short, bowed limbs. Of these characteristics we only know Rhodesian Man to possess (at most) two; the flat cheekbones, and perhaps the bulging skull walls (I was unable to find out about this). Whatever other similarities may appear between the Neanderthal and Rhodesian types when con-

trasted with Homo sapiens are just an expression of general primitiveness. There is a distinct morphological break between the two, with no overlap. Thus it is wrong to call Rhodesian - Saldanha Man a "Neanderthal", or to make him a race of the same species, for two reasons: first, it would imply a close genetic relationship where the similarities are not sufficient to prove such a relationship; second, it would imply that Rhodesian Man fits in morpho - logically with the special Neanderthal group, while he does not; the differences are greater than any present - day racial differences.

The term "Neanderthal" should be reserved for those fossils exhibiting a majority of the special characteristics of the European Neanderthals, as these form a natural grouping.

II: The Differences Between the Early and Late Neanderthals

The datable Third Interglacial Neanderthal finds are few. According to F. E. Zeuner (The Age of Neanderthal Man) the only Neanderthals which can be assigned to this period are:

Saccopastore
Ehringsdorf
Taubach
Krapina
some of the Mt. Carmel skeletons
Galilee
Steinheim (maybe)

(Monte Circeo may also be from the very late Third Interglacial, but it is obviously of the "conservative" or late variety anyway.)

I think the differences are best examined by looking at the early finds individually.

Saccopastore:

The first skull, the best preserved, was found in 1929 at the Saccopastore quarry near Rome, in the lowest terrace of a river. The second skull was found in 1935 ten feet above the first, in the same terrace. The terrace was formed

during the Riss/Würm Interglacial, and from the positions of the skulls, they must date from the later part of this period.

The skulls exhibit some traits which are more primitive than the classic Neanderthals and some which are more advanced. The cranial capacity of skull I, that of a young woman, is 1,200 cc., smaller than any of the classic Neanderthal specimens, and the capacity of skull II, which belonged to a male, has been estimated (but very roughly, as most of the brain box is

missing) at 1,290 to 1,[illegible] cc., much smaller than in any of the classic male Neanderthals. Boule and Vallois say of Saccopastore I that the cranial vault is lower and the face is larger relative to the brain case than in the classic Neanderthals, and also that the cheekbone is especially massive. In these respects, Saccopastore would seem to be even more primitive than the later Neanderthals. But in many other respects, these skulls are more advanced. Saccopastore I has a more nearly vertical, better developed forehead than any of the classic Neanderthal skulls of which

I could find photographs. Sergi also remarks on this character. The occiput is more rounded than in any of the classic specimens, and the angle formed by its base part is the same as in Homo sapiens, but different from that in the Fourth Glacial Neanderthals. According to Sergi, the dental arches of the Saccopastore skulls are horseshoe shaped, rather than U-shaped as in the later specimens, and the foramen magnum is as far forward as in modern Man. In their other principal characteristics, the skulls are similar to the late Neanderthals, except that the nasal openings

are rather far down.

Ehringsdorf:

In 1914, at Ehringsdorf near Weimar, Germany, a lower jaw was found; in 1916, the jaw, some teeth, and other bones of a child were found; and in 1925, a broken skull, lacking a face. All the remains were found in travertine, resting on a terrace of the Ilm River which dates from the Pre-Würm cool oscillation of the Third Interglacial. The travertine is covered by a layer of loess, another layer of travertine, and another layer of loess, which represent Würm I, the succeeding warmer period, and

Würm II, respectively. Thus the remains are sandwiched in between the Riss-Würm cool oscillation and Würm I layers — so they must date from the later part of the Third Interglacial.

The adult jaw is chinless, and is notable for its alveolar prognathism, which is more pronounced than in any other Neanderthal jaw of which I could find pictures. The genial tubercles seem lacking, and the dental arch is quite narrow. It is believed, however, that the alveolar prognathism and narrowness may in part be due to distortion of the mandible

after death. The wisdom tooth is much diminished in size.

Kötzschke and Virchow do not think the child's jaw could have developed into that of the adult, and that therefore the jaws must belong to representatives of different branches. However, they may not have taken individual differences sufficiently into account. The child's jaw is of essentially the same type as the adult's. It has the same sort of alveolar prognathism and lack of chin.

Altogether, these jaws are of Neanderthal type, but in some respects are more primitive than the later

specimens.

Unfortunately, there is some doubt as to how the skull should be reconstructed, as it was broken up and poorly preserved, so that the edges of the pieces do not match. The two reconstructions, by Weidenreich and by Kleinschmidt, differ in many respects. Howells thinks Kleinschmidt's, which has a lower vault, is the more accurate of the two. But in any case, the vault is certainly higher than in most of the later Neanderthals, though the cranial capacity, estimated at 1480 cc., is not particularly

large. The forehead is distinctly more vertical than in the classic Neanderthals. The skull also seems to be thinner. According to Keith, the walls of the classic skulls make up about 16% of the total length, but the walls of the Ehringsdorf skull only make up 12.3%. However, this figure may not be very accurate, because of the uncertainties of reconstruction. G. Behm-Blancke calls the mastoid processes strongly projecting, and says they fall within the range of sapiens variation, but Boule and Vallois, speaking of the similarities of Ehringsdorf to

the classic Neanderthals, mention "the same characters of the temporal bone with the small mastoid apophyses...". I am inclined to agree with Behm-Blancke.

On the other hand, the occiput is flattened and projecting, according to both reconstructions, as is usual with the classic Neanderthals. Kleinschmidt's reconstruction, and to a lesser extent Weidenreich's, displays the low bulge typical of the Fourth Glacial skulls. Also, the brows were massive and of Neanderthal form.

So again we have an apparently Neanderthal skull, which presents, however,

some advanced or sapiens - like characteristics.

Krapina:

The discovery, first described in 1899 by Gorjanovic - Kramberger, consists of numerous fragments of skulls and other bones, which were found in a sandstone cave or rock - shelter in Croatia.

There is some disagreement as to the age of the remains, but they seem to date mostly from the later part of the Riss/Würm Interglacial. Boule and Vallois say they cannot be earlier than Mid Pleistocene times, and they define

"Middle Pleistocene" (pp. 50 and 53, Fossil Men 1957 edition) to be the Würm Glaciation. Howells gives the age of the discoveries as Third Interglacial. Both F. E. Zeuner and Fr. Ožegović say the material dates mostly from the Third Interglacial, but that the upper parts may go over into the Würm Glacial.

Ožegović classes the Krapina people as a race of Homo neanderthalensis. He says they had a stature of about 160 cm or 5'3", though there were indications that taller individuals were present, and he gives the cranial capacity (I believe referring to

skull C1 as about 900 cc. This figure, however, seems rather incredible; it is no greater than that for Pithecanthropus IV of Java. But even if it is not very accurate, it no doubt indicates that the skull had a cranial capacity much below that of the classic Neanderthals.

From the reconstruction of Gorjanovic-Kramberger, the C skull would seem to have had a more rounded occiput and a much higher forehead and cranial vault than any of the classic Neanderthals. But I do not put too much faith in his reconstruction. He seems to have made the forehead too

high. In figure 4, I have carefully traced the reconstruction, and also part of a photograph in profile of the skull itself. I have drawn corresponding tangents on each of the orbits, above and below the supraorbital ridge. The angle produced is much larger in the case of the reconstruction. (See Fig. 4)

But even so, if we extend the line of what is left of the forehead, it still seems more vertical than is usual with the later Neanderthals; and the occiput still seems to be more rounded. The skull is brachycephalic.

Skull B, a child skull consisting of parts of the occipital and parietal bones, shows some of the projection of the occiput characteristic of the late Neanderthals. This skull is also brachycephalic.

Skull D, going by Gorjanovic-Kramberger's reconstruction, has brows which are heavy and seem well set off from the forehead; the occiput is not of the typical Neanderthal shape; the forehead and vault are distinctly higher than in the classic Neanderthals. Like the others, skull D is brachycephalic.

In all the specimens recovered,

the mastoid process is small, sometimes no more than a swelling. As for the limb bones, according to Gorjanovic-Kramberger's description, the humerus is slender, the radius and ulna are also slender but bowed, the legs are of almost completely modern form but do show some primitive traits. The tibia is somewhat bowed. Howells regards the limbs of the Krapina people as being less robust and specialized than those of the classic Neanderthals.

So, the Krapina people are essentially Neanderthal, but have four main sapiens-like characteristics: apparently a

higher forehead and cranial vault; in general a more rounded occiput, not like the classic Neanderthals, at least judging from Gorjanovic-Kramberger's reconstructions; their limb bones do not exhibit ..!! of the typical Neanderthal peculiarities; and they are the first known brachycephalic people — the only brachycephalic Neanderthals. On the other hand, judging from the estimate Ožegović gave of the cranial capacity of the C skull, it seems that they had small brains.

I do not think it is necessary to discuss the Palestine skulls in this connection, as these specimens, ranging from

Neanderthal to nearly sapiens, are evidently a group apart from the European precursors of the classic Neanderthals.

The Taubach finds are not of great importance.

The Montmaurin mandible, probably Third but possibly Second Interglacial, is basically Neanderthal, but is heavier and more primitive than later specimens. It seems to have some affinities with the Heidelberg jaw.

Steinheim:

This skull was found in 1933 in

a gravel pit at Steinheim, Germany.

There seems to be some disagreement as to its date. Howell assigns it to the Second Interglacial. Koenigswald and Vallois say it is probably Third Interglacial but possibly from a warm phase of the Third Glacial. Zeuner says it may be either from the Second Interglacial, from a warm oscillation of the Third Glacial, or from the Third Interglacial.

The skull presents a curious mixture of characteristics. The cranial capacity is about 1,150 cc., which is rather small, even for a female. The supraorbital ridges

are strong and of Neanderthaloid form. The mastoid processes are small, the nose is quite broad, and the upper jaw has a Neanderthal appearance.

But in spite of this, the skull has many non-Neanderthal characteristics. Although the brain case is somewhat low, it is similar to that of Homo sapiens in shape; the occiput is well rounded and lacks a torus, the forehead is more nearly vertical than in any classic Neanderthal, the sides tend to be flat rather than bulging as in typical Neanderthals. Also, the mid-line of the

skull is elevated (Fig. 5), while it is not in other Neanderthals. The face is not strongly prognathic and possesses canine fossa. Furthermore, it seems to me that the shape of the orbit is more like that of Homo sapiens; it tends to have a rectangular or square-ish shape, rather than being a wide circle or oval as in Neanderthal Man (see Fig. 5).

This puts the Steinheim skull in an ambiguous position — neither a good Neanderthal nor a good sapiens. Boule and Vallois call it a "Preneandertalian" with the other early Neanderthals. Howells thinks it is

more like Homo sapiens, and not a Neander-thal. Hooton calls both the Ehringsdorf and Steinheim skulls early Neanderthals, but says they "approximate Homo sapiens". I agree with Howells, myself. The Steinheim skull does not seem to fit in with the early Neanderthals. None of them have so little prognathism and such good canine fossa, or the elevated mid-line, or the flat-sided brain case, or the sapiens-like orbits. But Stein-heim cannot as yet be definitely pushed out of the Neanderthal line. It could, for example, have been an early ancestor, or even a common ancestor to

both H. sapiens and the Neanderthals.

General Conclusions:

We have seen that each of the pre-Würm Neanderthal skulls exhibits several sapiens-like characteristics. However, all these characteristics are not the same in each case. This would make it seem likely that there existed more than one variety of Neanderthal Man in Europe at this time. But it is unwise to jump to conclusions on this point, as the skulls are not necessarily of the same age, and the differences (except for Steinheim) may be within the range of individual

variation.

One trait which we know they all did have in common was a good forehead. In spite of the fact that Sac-opastore has a low brain case, a fairly good cranial vault would seem to have been the usual thing, and although Ehringsdorf and at least one of the Krapina specimens (skull B) had flattened, projecting occiputs, the early Neanderthals did not consistently show this characteristic as did the later ones. Krapina may indicate that the early Neanderthals had less specialized limbs,

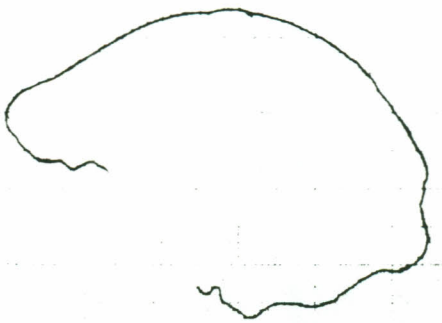
although, considering the differences which exist between the skulls, it is not very safe to generalize on the basis of one find. It may also be that they had smaller brains, but with so few specimens we can only guess at this, since brain size can vary tremendously between individuals. Presumably, in view of the Ehringsdorf jaws, some at least of these early Neanderthals had rather primitive mandibles.

All we can safely conclude, then, about the early Neanderthals in general (excluding Steinheim) is that they

seem to represent a less uniform and special population than the late Neanderthals, and present a less sapiens-like characteristics, but that the line separating them from the later people is vague, for, looking back over each find, we see that in any given characteristic the early group and the late group overlap, except for the forehead, which seems to be consistently better in every early specimen than in any of the late specimens.

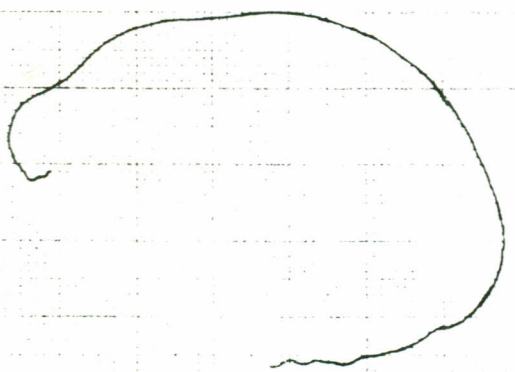
The Pithecanthropus from Sangiran.
(Note similarities to Solo!)

SOLO XI

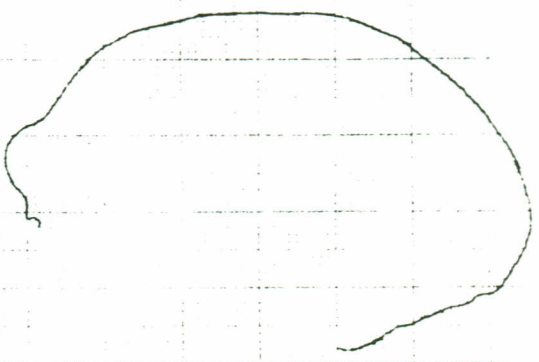


SOLO V

SOLO I



La Ferrassie



La Chapelle

SOLO V

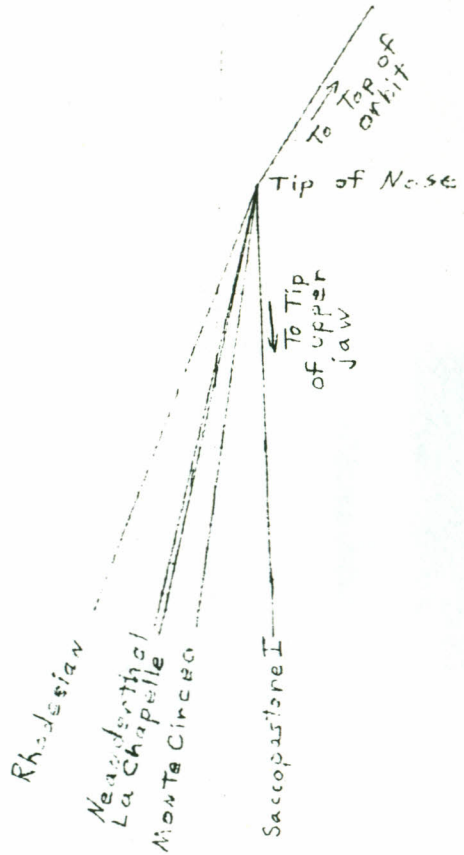
SOLO IV

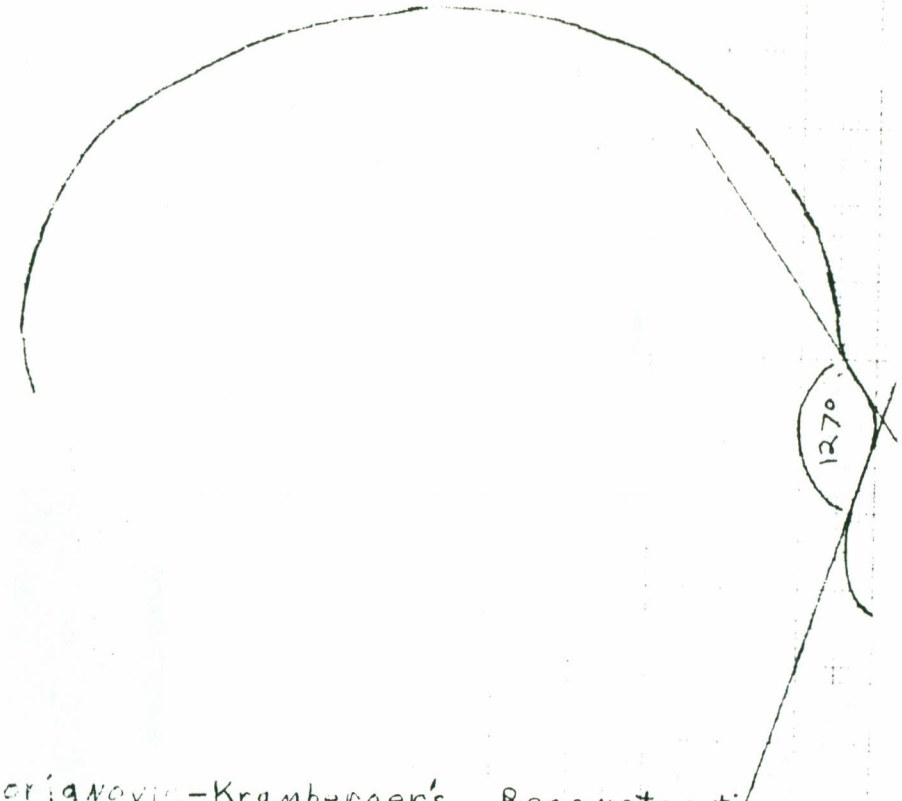
Typical Neanderthal brows — La Chapelle

SOLO XI

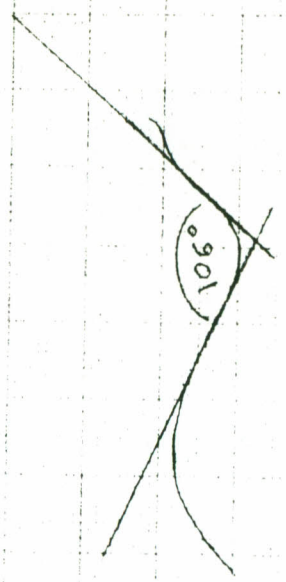
Brows of Rhodesian Man (Note projection at outer corners)

Since only the Top of the skull, without a face, was found at Neanderthal, the line labelled "Neanderthal", obtained from a reconstruction by Klaatsch, is hypothetical.



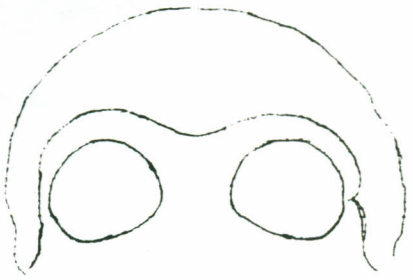


Gorjanović-Kramberger's Reconstruction of the Krapina C skull
(p. 254, Der diluviale Mensch von Krapina)

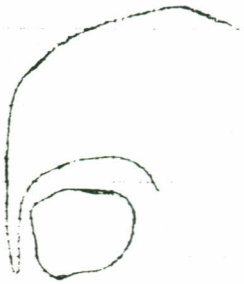


Profile of the Krapina C skull traced from a Photograph

Homo Sapiens



La Chapelle



Steinheim

Bibliography

Boule and Vallois, Fossil Men, New York, 1957.

Gorjanovic-Kramberger, Der diluviale Mensch von Krapina in Kroatien — Studien über die Entwicklungsmechanik des Primatenskelettes (edited by O. Walkhoff), Zweite Lieferung. Wiesbaden, 1906

Hooton, Up From the Ape, New York, 1940.

Howells, Mankind in the Making, New York, 1959

Zeuner, The Age of Neanderthal Man, London, 19

Hundert Jahre Neanderthaler, Gedenkbuch der internationalen Neanderthal-Feier, Köln, Böhlau, 1958.